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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 10/736,223
Filing Date: December 15, 2003
Appellant(s): SELVAMANICKAM, VENKAT

David A. Schell
For Appellant

EXAMINER'S ANSWER

1. This is in response to the appeal brief filed, June 7, 2010 appealing from the Office action mailed January 13, 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1-5 and 7-19

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN

REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

2005/0014653	REEVES ET AL.	01-2005
6,794,339	WIESMANN ET AL.	09-2004
4,962,085	DEBARBADILLO, II ET AL.	10-1990
5,206,216	YOSHIDA	04-1993
5,278,138	OTT ET AL.	01-1994
5,653,806	VAN BUSKIRK	08-1997
6,083,885	WEINSTEIN	07-2000
6,774,088	MANABE ET AL.	08-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-5,8-13,15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) further in combination with Van Buskirk (5,653,806) further in combination with Reeves et al. (2005/0014653).

Weismann et al. (6,794,339) teaches synthesis of YBCO using sub-atmospheric processing. Weismann et al. (6,794,339) teaches forming crystalline YBCO that includes

forming a precursor film and heat treating at a temperature above 500°C in the presence of oxygen, nitrogen and water vapor at sub atmospheric pressures (abstract). Weismann et al. (6,794,339) teaches water vapor pressures of up to 25 Torr as well as a carrier gas such as nitrogen with the addition of oxygen (col. 2, lines 5-15). By products are swept out of the chamber in a more efficient manner (col. 2, lines 50-60). The growth rate ranges from 1-20 angstroms per second (col. 4, lines 20-22). The substrates on which the superconducting films are deposited on include nickel coated with a buffer of cerium oxide (col. 7, lines 10-20). Sub-atmospheric pressure of 1-760 Torr are utilized in the processing chamber (Fig. 4 and col. 8, lines 35-45.

Weismann et al. (6,794,339) fails to teach this process utilized in coating tapes.

DeBarbadillo, II et al. (4,962,085) teaches production of oxidic superconductors by zone oxidation of a precursor alloy. This oxidation post-treatment can be performed on a variety of substrate shapes including tapes, ribbons and wire (abstract, Fig. 1 and col. 1, lines 1-15).

Yoshida (5,206,216) teaches a method of fabricating oxide superconducting wires by laser ablation. The superconducting coating is applied to wires or tape-like substrates and post-treated in an oxygen atmosphere to form the superconductor coating (abstract and Fig. 3).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Weismann et al. (6,794,339) process by utilizing the process to form superconducting materials in tape/ribbon form as evidenced by deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) with the expectation of achieving similar success.

Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) fail to teach the use of a showerhead to supply the oxygen/water vapor.

Van Buskirk (5,653,806) teaches using a showerhead-like discharge assembly for forming high temperature superconducting copper oxide films because the showerhead dispenser for the precursor mixture allows thorough mixing and homogeneity to be achieved in the interior volume of the disperser housing producing uniform vapors and a uniform deposited film (col. 4, lines 28-40).

Therefore it would have been obvious at the time the invention was made to have modified Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) process by incorporating showerhead to supply the oxygen/water vapor as evidenced by Van Buskirk (5,653,806) with the expectation of achieving similar success.

Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) further in combination with Van Buskirk (5,653,806) fail to teach the translating rate of 10 m/h.

Reeves et al. (2005/0014653) teaches a method of forming superconducting articles and XRD methods of characterizing the same. The deposition process includes PLD and CVD ([0037]). The translation rate of the tape substrate is 0.3 meters – 10 meters/h ([0063]).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) further in combination with Van Buskirk (5,653,806) semiconductor coating process by incorporating a translating speed of 10m/h as evidenced by Reeves et al. (2005/0014653) with the expectation of achieving similar success, i.e. a higher throughput.

With respect to claim 13 which recites a pumping system to remove by-products, it is noted that Weismann et al. (6,794,339) teaches by products being swept out of the chamber in a more efficient manner (col. 2, lines 50-60) and hence, the addition of a pumping system to perform this function would be within the skill of one practicing in the art.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) further in combination with Van Buskirk (5,653,806) further in combination with Reeves et al. (2005/0014653) still further in combination with Manabe et al. (6,774,088) or Weinstein (6,083,885).

Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) further in combination with Van Buskirk (5,653,806) further in combination with Reeves et al. (2005/0014653) fail to teach the processing chamber having a dew point between 40-80°C.

Manabe et al. (6,774,088) teaches a rare earth barium copper compositions and method of producing superconductors. Manabe et al. (6,774,088) teaches dew point temperatures of 80°C when heating the superconducting precursor to form the superconductor. This can be done in reduced pressure (col. 4, lines 40-65 and Examples 2 and 4).

Weinstein (6,083,885) teaches method of forming textured high temperature superconductors. Weinstein (6,083,885) teaches REBCO superconductors where the precursors are heated in an oxygen atmosphere with a dew point in the range of 20°C-75°C (col. 11, lines 10-45).

Therefore it would have been obvious for one skilled in the art at the tie the invention was made to have modified Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) further in combination with Van Buskirk (5,653,806) further in combination with Reeves et al. (2005/0014653) process by performing the post-treatment having a dew point as claimed as evidenced by Manabe et al. (6,774,088) or Weinstein (6,083,885) with the expectation of achieving similar success.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) further in combination with Van Buskirk (5,653,806) further in combination with Reeves et al. (2005/0014653) further in combination with Ott et al. (5,278,138).

Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) further in combination with Van Buskirk (5,653,806) further in combination with Reeves et al. (2005/0014653) fail to teach the processing chamber being a cold-walled chamber.

Ott et al. (5,278,138) teaches an aerosol CVD deposition of a metal oxide film. The metal oxide film can be superconductive coating such as YBCO (col. 3, lines 15-35). The reactors for which the process can take place include both cold-wall and hot-wall reactors (col. 5, lines 50-60).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Weismann et al. (6,794,339) in combination with either deBarbadillo, II et al. (4,962,085) or Yoshida (5,206,216) further in combination with Van

Buskirk (5,653,806) further in combination with Reeves et al. (2005/0014653) process chamber to be a cold-wall chamber as evidenced by Ott et al. (5,278,138) with the expectation of achieving similar success.

(10) Response to Argument

Appellant argued that the primary reference teaches an "ex-situ" process whereby the secondary references teach an "in-situ" process and therefore combining the references would not be suggestive to produce the desired results.

The Examiner agrees in part. While the Examiner acknowledges the fact that the references teach different processes "in-situ vs. ex-situ", it is the Examiner's position that one skilled in the art at the time the invention was made would have had a reasonable expectation of success despite the known differences between the two processes. Furthermore, the secondary references are relied upon for teaching process structure, i.e. apparatus such as cold wall chamber and showerhead which benefits would be expected to be garnered from either process. The modification of a tape substrate, rate of translation of tape and dew point in the chamber are parameters not critical to the production of a superconductive coating and would have been within the skill of one practicing in the art to "optimize" these parameters to produce the desired final product taking into consideration the type "ex-situ and in-situ" process utilized.

Appellant argued that the prior art fails to teach the MOD precursor and the MOD process.

The Examiner agrees in part. While the Examiner acknowledges the fact Weismann et al. (6,794,339) fails to explicitly teach using MOD, Weismann et al. (6,794,339) does teach MOD processes are known to be utilized to form superconductive films (col. 1, lines 35-65). Hence, this teaching would meet the limitations as claimed.

Appellant argued that the translational rate of of at least 10 meters/hr would not be obtainable with a “ex-situ” process MOD process on a translating tape and argued Reeves et al. (2005/0014653) teaches an in-situ process with the claimed translation rate.

The Examiner agrees in part. As noted by the Examiner, Reeves et al. (2005/0014653) teaches deposition processes that include PLD (in-situ) and CVD (ex-situ or in-situ) ([0037]). It is noted that Reeves et al. (2005/0014653) further teaches that the coating process can be either in-situ or ex-situ process ([0072]) and this would be applicable to using translational rate of 10 meters/hour. Hence, one skilled in the art would have had a reasonable expectation of achieving success with the claimed translation rate in an “ex-situ" process as taught by Reeves et al. (2005/0014653).

Appellant argued Van Buskirk (5,653,806) showerhead does not meet the limitations claimed regarding width and length.

The Examiner agrees in part. While the Examiner acknowledges the fact that Van Buskirk (5,653,806) fails to explicitly teach this, it is the Examiner’s position that the size and shape of the showerhead is a matter of design choice of one skilled in the art and would be

optimized by a practitioner in the art absent a showing of unexpected results garnered directly therefrom.

Appellant argued the pump is located proximate to the precursor conversion zone.

The Examiner disagrees. Weismann et al. (6,794,339) and Van Buskirk (5,653,806) as noted by Appellant have exhaust ports/pumps to remove process gases. The limitation that the pump be "proximate" to the conversion zone would be met by these references.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Brian K Talbot/

Primary Examiner, Art Unit 1715

Conferees:

/Timothy H Meeks/

Supervisory Patent Examiner, Art Unit 1715

/Michael Barr/

/M. B./

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